PFE ORIGINAL

SEMS DocID 2261459

DRAFT

EXPANDED CONTAMINATION STUDY WORK PLAN

SHAFFER ELECTRIC COMPANY SITE
MINDEN, FAYETTE COUNTY, WV

June 27, 1994

Prepared by:

[redacted]
R[redacted]
Region III - Technical Assistance Team
TDD# 9403-5A PCS# 5372
Roy F. Weston, Inc.
Delran, New Jersey

For:

Stephen Jarvela, OSC
U.S. EPA Region III
Superfund Removal Branch
Philadelphia, Pennsylvania

PFE ORIGINAL

DRAFT

TABLE OF CONTENTS

PFE ORIGINAL

DRAFT

TABLE OF CONTENTS

DRAFT

ATTACHMENTS

PFE ORIGINAL

DRAFT

1.0 INTRODUCTION

This Expanded Contamination Study (ECS) Work Plan for the Shaffer Electric Company Site, Minden, Fayette County, West Virginia, has been developed by members of the United States Environmental Protection Agency (EPA) Region III Technical Assistance Team (TAT) at the request of On-Scene Coordinator (OSC) Stephen Jarvela.

TAT used the site map (Map 14) generated during the site review in September-October, 1993, as a base map for all maps submitted with this plan.

2.0 SITE BACKGROUND

2.1 Site Location

The Shaffer Electric Company (SEC) Site is located in Minden, Fayette County, West Virginia, off Old Minden Road (Figure 1). The site is located on the United States Geological Survey (USGS) Oak Hill and Thurmond, WV, 7.5 minute series topographical maps at 37 degrees, 58 minutes, 35 seconds north latitude and 81 degrees, 7 minutes, 38 seconds west longitude.

2.2 Site Description

The SEC Site occupies a long and relatively narrow area of land, approximately 5 acres in size which contains the Shaffer Electric Building and a small shed (Map 14). The site is approximately 1600 feet long and has a maximum width of approximately 250 feet. The site lies in a valley surrounded by hills and slopes to the north towards Arbuckle Creek, which flows northeast. To the west, the site is bounded by a roadway separating it from several residences. To the south, the site is bounded by hills containing an abandoned mine shaft (Minden Mine #3). There are several residences along the east side of the site. On the north, on the opposite side of Arbuckle Creek, there are several abandoned residential and industrial buildings. There are two gated fences present on site: one along the northeast border of the site and the other about 100 feet west of the Shaffer Electric Building. These fences restrict vehicular access to the site, but not access by humans or animals.

Approximately 175 feet west of the Shaffer Electric Building is a drainage ditch that runs across the site, discharging into Arbuckle Creek (Map 14). There is another ditch which

DRAFT

starts in an area southwest of the Shaffer Electric Building and flows along the edge of the hill located south of the site. This ditch discharges into Arbuckle Creek about 1,000 feet east of the site. There are three bridges/culverts across Arbuckle Creek along the length of the site. There is a berm along the southern bank of Arbuckle Creek, starting from the western boundary of the site and ending at a location north of the Shaffer Electric Building (Map 14). This berm was reconstructed after the 1987 site activities. There is also another berm along Arbuckle Creek which starts east of the middle bridge and ends at the eastern fence line. These berms serve as a flood control measure for the site.

2.2.1 Shaffer Electric Building

The Shaffer Electric Building is located in the central part of the site (Map 14). The building has a floor area of approximately 825 square yards and rests on a concrete pad which extends to cover approximately 310 additional square yards outside the building. To prevent unauthorized entry, all entrances to the Shaffer Electric Building are sealed except one which is locked at all times. Several items of equipment owned by SEC are stored inside the building. The OSC is in the process of obtaining a list of the equipment in the building. There is no record that extensive sampling inside the SEC building has occurred, however, one floor sample was collected during an earlier sampling event which indicated contamination of PCBs as high as 4,000 ppm.

2.2.2 Pit Area

The Concerned Citizens to Save Fayette County (CCSFC) claimed that an undetermined amount of PCB contaminated oil was disposed of in the pit area during the operating years of the Shaffer Electric Company. During the October-November 1993 site investigation, one CCSFC Member, who is a former employee of SEC, identified the location of the pit to EPA and approximated the center of the pit (Map 14). He claimed that the pit was approximately 14 feet deep at the time of disposal of the PCBs. He never visited the pit area during the period of alleged disposal and he does not know if any transformers or solid debris were disposed of at that location. The area is now filled with coal refuse and has been levelled.

PFE ORIGINAL

DRAFT

2.3 Past Site History

From 1970 to 1984, SEC built electrical substations for the local coal mining industry. Various types of transformers, capacitors, switches, and voltage regulation and distribution devices were incorporated into these substations. Oil containing polychlorinated biphenyls (PCBs) was used in the electrical transformers and other equipment. SEC stored non-essential, damaged, or outdated transformers and capacitors on site. Leaks from the equipment, possible spills and poor disposal practices appear to be responsible for the PCB contamination.

2.4 Past Site Investigations and Clean-up Actions

The West Virginia Department of Natural Resources (WVDNR) inspected the site in 1984 and found several hundred transformers and capacitors on site. Analysis of site soil and sediment samples indicated elevated levels of PCBs on site. At the request of the WVDNR, EPA investigated the site and subsequently performed two removal actions. The first removal action was performed from December 1984 through December 1987, and the second one was performed from November 1990 through January 1991. During the above period, EPA excavated soil at eight areas, shown as Areas I through VIII in Map 14.

CCSFC performed their own sampling on site on July 14, 1991. Results of this sampling indicated the presence of PCBs on site.

TAT performed a data search regarding PCBs at the site and submitted a report to EPA on June 16, 1993. TAT summarized all previous analytical results and produced a scaled map of the site showing approximate locations of all previous site activities, including sampling and soil excavation.

During the period of October 18-25 and November 3-5, 1993, TAT performed a site assessment, and collected soil, sediment and water samples. The sampling revealed that PCB contamination still remained in some areas on site at levels in excess of 50 ppm. TAT collected surface soil samples and one sub-surface soil sample at a depth of 3 feet from the pit area which did not indicate any PCB contamination. TAT also performed a topographical survey and erosion survey during that period.

DRAFT

2.5 Environmental Set-up

2.5.1 Topography

The site is located in a valley that runs to the east and west and is bounded to the north by Arbuckle Creek. In November 1993, TAT performed a topographical survey and prepared a topographical map of the site (Map 14). The site slopes from south and southwest to north and northeast towards the Arbuckle Creek. The difference in elevation between the southwest corner and the northeast corner is approximately 30 feet.

2.5.2 Regional and Site Geology

TAT went through the state and local geological records and the mine maps and prepared a geological report which is attached as Attachment 3. Due to the limited availability of the data, the report could not detail the geology of the site.

2.5.3 Demographics and Land Uses

Minden is a small coal mining town of approximately 2,000 inhabitants. There are no schools, parks, playgrounds, nursing homes or hospitals within a 1-mile radius of the site. Many elderly people and children live in Minden. In the past, coal mining was prevalent, but many of the coal mines have been closed. The general area is economically depressed. According to CCSFC, the per capita income in Minden is approximately $4,000. Current land use in the vicinity of the site is residential.

2.5.4 Groundwater

During the site investigation in October-November 1993, TAT performed a limited groundwater survey at the site. From the data collected on groundwater levels, the direction of groundwater was approximated as moving from the hill side northwest towards the Arbuckle Creek. The depth of the groundwater surface ranged from the ground surface to more than 35 inches below the ground surface.

2.5.5 Surface Water

The Site receives overland water flow from the hills to the south during times of precipitation. Approximately 175 feet west of the Shaffer Electric Building is a drainage ditch that runs across the site, discharging into Arbuckle Creek (Map

DRAFT
PFE ORIGINAL

14). Most of the precipitation from the hills southwest of the site flows through this ditch. There is another ditch which starts in an area southwest of the Shaffer Electric Building and flows along the edge of the hill located south of the site. This ditch discharges to Arbuckle Creek about 1,000 feet east of the site. There is a berm along the southern bank of Arbuckle Creek, starting from the western boundary of the site and ending at a location north of the Shaffer Electric Building (Map 14). This berm was reconstructed after the 1987 site activities. There is another berm along Arbuckle Creek which starts east of the middle bridge and ends at the eastern fence line. These berms serve as a flood control measure for the site.

2.6 Water Uses

No individual residence around the site utilizes well water. The Minden water supply comes entirely from Rock Lick Spring and is treated at a municipal treatment plant, the Arbuckle Public Service District, prior to distribution. A spring adjacent to the Minden Post Office Building may have been used by some residents as a source of drinking water in the past. Water from both Rock Lick Spring (before treatment) and the spring adjacent to the Post Office were tested in the past and no PCBs were detected.

West Virginia American Water Company (WVAWC) provides water to the town of Oak Hill, which is located west of Minden. One of their water sources is Minden Mine #3. Their four water intake wells are located due west of the site. The raw water is tested periodically and past analysis indicated no PCB contamination. The initial geologic report suggests that the abandoned Minden Mine system is <u>structurally and topographically</u> upgradient of the Site at the Site map location. The Minden Mine system does dip in the direction of the WVAWC supply wells, but surface runoff and primary permeability suggest water from the Site would not flow toward the WVAWC wells, unless the water does indeed enter the underlying bedrock, and could potentially flow towards the well complex. No determination of whether this water would follow bedding planes and pass far beneath the well system, or whether cross-bed migration upwards through geologically younger formations can be ascertained at this time. This report is pending peer review by the state geologist before final determination of risk is made. All other surrounding water sources are located well away from the migration route of the PCB materials from the site.

DRAFT

3.0 OBJECTIVES

The objectives of this work plan include characterization of the Shaffer Electric Building and the pit area; resolving conflicting analytical results of past sediment samples collected form the Arbuckle Creek; sampling of Arbuckle Creek for microorganisms, and a bioassay of fish/turtle tissue; performing a geological study of the site; and collecting and analyzing soil samples from gardens of concerned residents in the Minden area. During the geological study of the site, soil and groundwater samples will be collected to determine the extent of contamination.

The data collected will supplement the data generated during the October-November 1993 sampling and when combined, this data will help the OSC, and state and local officials decide on a long term remedy for the site.

The data will be provided to the EPA Environmental Response Team (ERT), the Agency for Toxic Substances and Disease Registry (ATSDR), state and local authorities, CCSFC and other interested parties.

4.0 APPROACH TO SITE INVESTIGATION

In preparing this ECS Work Plan, TAT reviewed the Data Search Report dated June 16, 1992, Site Review Trip Report dated January 3, 1994, Public Health Assessment by ATSDR dated June 1, 1993, and the concerns raised in the public availability meeting in Oak Hill, WV, during May 1-5, 1994.

The Shaffer Electric Building was not investigated in detail in the past. The data available for Arbuckle Creek sediment is limited and conflicting. A study of the microorganisms and aquatic life and a bioassay of fish/turtle tissue was one of the popular issues in the public availability meeting. Also, several citizens residing in the Minden area expressed concern about possible PCB contamination in their gardens.

Information on the geology of the site and the pit area is also very limited. No record of any in-depth subsurface soil investigation of the site or the pit area is available. To fully understand the geology of the site and to determine the potential subsurface pathway(s) of contamination movement, a detailed geological survey of the site is required.

PFE ORIGINAL

DRAFT

Based on the above concerns, the OSC is considering investigating further the site areas where sufficient data is not available to adequately characterize these areas.

4.1 The Shaffer Electric Building

To determine the extent of PCB contamination in the building, floor dust and concrete samples will be collected. Wipe samples from the walls and ceiling of the building and from the equipment stored inside the building will also be collected. The samples will be analyzed for PCBs. The floor inside the building will be divided into 6 sections and one floor dust sample will be collected from each section. A total of 10 wipe samples will be collected from the walls and ceiling of the building(4-inside wall, 4-outside wall, 2-ceiling). Wipe samples will be collected from 10 percent of the equipment presently stored inside the building. Four concrete samples will be collected from locations inside the building determined by the past uses of the area and by visible signs of contamination. Two additional concrete samples will be collected from the outside concrete pads.

4.2 Arbuckle Creek

Arbuckle Creek flows eastward along the northern boundary of the site. Previous sampling conducted in Arbuckle Creek along the Berwind property and upstream did not indicate any PCB contamination. The creek bed in this part appears to be stable and there is a flood control berm on the south bank of the creek. No further action is required, at this time, for this portion of the creek.

Sampling of the Arbuckle Creek sediment downstream of the Berwind Property in 1984-85 indicated PCB contamination in some locations. In 1993, TAT collected samples from approximately the same locations but the results did not show any PCB levels of concern. Sampling in Arbuckle Creek was limited in the past and the records were poorly maintained, therefore, it is necessary to conduct additional sampling of the creek sediments. Samples will be collected as follows:

> Sediment samples will be collected at intervals of 250 feet starting from a location 50 feet upstream of the eastern property line of the Berwind Land Company to the bridge east of the site. The 50-foot length upstream will be used because of the potential for contamination from the drainage ditch discharge to this area. Sediment will be collected from areas where sediment accumulation

DRAFT

may have occurred. A total of 6 sediment samples will be collected from this section of the creek. The proposed sample locations have been identified on Map 18.

Two additional sediment samples will be collected from the creek downstream of the east bridge, one near the Post Office and the other halfway between the site and the Post Office. The samples will again be collected from areas where possible sediment accumulation may have occurred.

4.3 Arbuckle Creek Microorganism and Fish/Turtle Tissue Sampling

Some PCBs are highly resistant to degradation and bioaccumulate in aquatic species. The concentration of PCBs in fish, shrimp, and oysters can reach 26,000 to 66,000 times their concentration in water.

There is no record of previous PCB sampling of fish, turtle or other aquatic life in the area. The area residents have reportedly eaten snapping turtles from the area. There is evidence that PCBs bioaccumulate in snapping turtles (reptiles). ATSDR cautioned pregnant and nursing mothers residing in the Minden area not to eat snapping turtles caught in the site vicinity until turtles have been caught, bioassayed and determined safe to eat.

West Virginia Department of Environmental Protection (WVDEP) will assist with the collection of fish/turtle tissue bioassay samples. Samples of snapping turtles and top and bottom feeding species of fish have been planned for collection. The actual species collected will depend on the availability of fish. To determine the impact of the site on aquatic life, background samples will be collected from a nearby unaffected creek. If fish/turtle samples cannot be collected due to non-availability, collection of microorganisms from the creek will be considered.

4.4 Geological Survey of the Site

Information on the geology of the site is very limited. No record of any in-depth subsurface soil investigation of the site is available. The site investigation performed in 1993 revealed surficial PCB contamination in excess of 50 ppm in areas around the Shaffer Electric Building. The vertical extent of contamination at the site has not been studied in detail in the past. Limited information is also available on the groundwater at the site. TAT collected groundwater data

PFE ORIGINAL

DRAFT

during the 1993 site investigation, however, it is not sufficient to characterize the groundwater on site.

A geological survey of the site will be performed to understand the geology of the site and to find out possible pathway(s) of subsurface contamination. Based on the area geology, a total of 11 locations have been considered for geological data collection. The locations identified on Map 18 are located primarily in the known contaminated areas and in the potential contamination migration pathway from the site. One location has been selected from the Berwind property and one from the eastern part of the site, where no surface contamination was detected in the 1993 site investigation. Soil samples will be collected every 2 feet down to bedrock at each location for geological data. These samples will also be used for PCB analysis to determine vertical extent of contamination. In addition, one soil sample will be collected at the groundwater interface and one at the bedrock.

Monitoring wells will be installed at 6 of the 11 boreholes introduced for a geological survey (Map 18). These locations have been selected considering the area geology and possible direction of groundwater flow.

4.5 Pit Area

Only limited information about the pit is available at the present time, i.e., the approximate location and depth of the alleged pit. Therefore, it may be useful to consider several scenarios of the dumping of oils into the pit area which are discussed in Attachment 5.

Three methods have been considered for the subsurface investigation of the pit area: use of a test pit, a test trench, and test boring. Test boring was been chosen as the method to be used. A maximum of 5 locations will be considered for a geological and subsurface contamination study on a 25-foot grid pattern. The locations have been numbered 1 through 5 on Map 18. Considering the possible direction of groundwater flow, a total of 4 locations have been selected for installing monitoring wells. During field testing, if any contamination is found in any of the samples collected from the pit area, monitoring wells will be installed in those locations.

Initially, one borehole will be introduced at location SS 16, the center of the pit, and soil samples will be collected

DRAFT

every 2 feet down to bed rock and the geological data will be logged in a boring log. In addition, one soil sample will be collected at the groundwater interface and one at the bed rock. The samples will then be field tested for PCBs and petroleum hydrocarbons. If no contamination is found, samples will be collected from location SS 17. If no contamination is found in SS 17 borehole, alternative investigations such as test trenches and test pits may be utilized instead of test boring to find any possible hot spots. If no contamination is found in the area, no monitoring wells will be installed.

4.6 Residential Garden Sampling

Some residents of the Minden area who attended the Public Availability Meeting during May 1-5, 1994, expressed concern to the OSC about their gardens. Because of their concerns, the OSC is considering collecting soil samples from their gardens, on a case by case basis. Depending on the history of the garden, surface and/or subsurface samples will be collected.

5.0 FIELD INVESTIGATION STUDY AND FIELD PROCEDURES

This field investigation study will include sampling of soil, sediment, groundwater, wipes, concrete, and fish/turtle tissue.

5.1 Mobilization

EPA, TAT, and sub-contractors will mobilize on site one day prior to the start of the site activities. A command post area will be set up, which will serve as a central communications center. A decontamination area will be set up for personnel decontamination and a decontamination pad will be set up for equipment decontamination. A field laboratory will be set up in the command post area to field test samples. The local utility companies will be contacted prior to any drilling or digging to identify utility lines on site.

5.2 Establishing Sampling Locations

Most of the proposed sample locations have been tentatively identified on the sample location map (Map 18). Prior to departure for the sampling trip, TAT will use a computer to determine the relative distance and angle of each proposed sample location from concrete monuments placed on site during the 1993 site investigation. Once on site, TAT will use that

PFE ORIGINAL

DRAFT

data to identify the sampling points on the ground using survey equipment.

All sampling points will be marked using survey flags and the appropriate sample numbers. Any sample location adjustment necessary because of field conditions will be recorded in the site log book and added to Map 18 to reflect the adjustment.

5.3 Sampling Equipment

A list of the sampling equipment to be used for implementation of this work plan has been included as Attachment 5.

5.4 Brush and Debris Clearing

Before starting the soil boring and sampling activities, brush and debris will be cleared from the sampling locations using hand (manual and power) tools. Brush and debris will be cleared to the extent necessary to perform the soil boring and sampling. All brush and debris will be left on site. Tools used will not be placed directly on the ground, but on a plastic sheet. Any piece of equipment or tool which contacts disturbed soils will be decontaminated as described in Section 5.8 of this plan.

5.5 Geological Data Collection

The geological data on the site will be collected from the pre-selected locations using a drill rig. A decontaminated 2-foot split spoon will be used to collect soil samples continuously until bedrock is reached. Each soil sample will be described according to the ASTM Standard Practice for Description and Identification of Soil, and logged in the log book. A separate boring log will be maintained for each borehole. The depth of groundwater interface and bedrock will also be logged in the log book and in the boring log. A geologist will be assigned to each crew and will be responsible for monitoring all sampling activities.

5.6 Sample Collection

The soil, sediment, water, concrete, floor dust and wipe samples will be collected as described below.

5.6.1 Surface Soil Sample Collection

All surface soil samples will be collected following OSWER 9360.4-02, Standard Operating Procedure (SOP) #2012. Surface

DRAFT

soil samples will be collected at a depth of 0 to 6 inches using dedicated, precleaned sampling scoops. A sufficient quantity of sample for the analytical method will be collected from each sample location. After collection, the sample will be placed in a precleaned stainless steel or aluminum homogenization container and mixed thoroughly to obtain a homogenous sample. The sample will then be transferred into a precleaned 8-ounce sampling jar and tightly secured with a cap. The sample number will be marked outside the jar. Unless otherwise specified, one 8-ounce sample will be collected at each location. The sample number, location, name of the sampler, and the date and time of sampling will be recorded in the log book.

5.6.2 Subsurface Soil Sample Collection

At the soil boring locations, the soil samples collected for geological data will be used for chemical analyses. The two-foot section of the core for each specified depths will be placed in a precleaned stainless steel or aluminum homogenization container and mixed thoroughly to obtain a homogeneous sample.

Subsurface samples from the residential gardens will be collected using a precleaned hand auger. A sufficient quantity of sample for the analytical method will be collected at each depth from each sample location. After collection, the sample will be placed in a precleaned stainless steel or aluminum homogenization container and mixed thoroughly to obtain a homogeneous sample.

After homogenization, the sample will then be transferred into a precleaned 8-ounce sampling jar and tightly secured with a lid. The sample number will be marked on the jar. Unless otherwise specified, one 8-ounce sample will be collected at each location. The sample number, location, name of the sampler, and the date and time of sampling will be recorded in the log book.

5.6.3 Sediment Sample Collection

Sediment samples will be collected following OSWER 9360.4-03, SOP #2016. A precleaned bucket auger will be used for collecting sediment samples. The auger will be inserted into the sediment at an angle of 0 to 45 degrees from the vertical and rotated once or twice to cut a core of the sediment, then slowly withdrawn. The sediment will then be placed in a precleaned aluminum or stainless steel homogenization

PFE ORIGINAL

DRAFT

container and mixed thoroughly to obtain a homogeneous sample. The sample will then be transferred into a precleaned 8-ounce sampling jar and tightly secured with a lid; the sample number will be marked on the jar. Water will be decanted off the sediment samples, as far as possible, before transferring them into sampling jars. Unless otherwise specified, one 8-ounce sample will be collected at each location. The sample number, location, name of the sampler, and the date and time of sampling will be recorded in the log book.

5.6.4 Concrete Sample Collection

Concrete samples will be collected by chipping the top one inch of concrete at the selected location. A precleaned chisel and a hammer will be used to chip the concrete. Samples will be collected in a precleaned aluminum or stainless container. The sample will then be transferred into a precleaned 8-ounce sampling jar, tightly secured with a lid, and the sample number will be marked on the jar. Unless otherwise specified, one 8-ounce sample will be collected at each location. The sample number, location, name of the sampler, and the date and time of sampling will be recorded in the log book.

5.6.5 Groundwater Sample Collection

5.6.5.1 Monitoring Well Construction

Monitoring wells will be constructed according to OSWER 9360.4-06 SOP #2150. Wells will be constructed with ASTM-approved, 2-inch diameter polyvinyl chloride (PVC) well screen and riser pipe as needed. Filter pack will be placed into the borehole around the well screen using a #2 silica sand to approximately 2 feet above the screened interval. Approximately 2 feet of bentonite pallet or powdered bentonite will be placed on top of the sand and immediately hydrated to prevent surface water infiltration. Wells will be finished with a 20 per cent bentonite/cement slurry and protective steel casings with locking well caps. Each well will have approximately 2.5 to 3 feet of riser pipe and protective casing extending above the ground surface, except where vehicle traffic requires that wells be constructed flush with the surface. A 2-foot by 2-foot concrete pad will be constructed at the ground surface around each well. On the outside casing of each monitoring well a distinct number and the date of installation will be marked. All data required according to the SOP will be recorded in the log book.

DRAFT

5.6.5.2 Monitoring Well Development

Wells will be developed within 24 hours of installation according to OSWER 9360.4-06 SOP #2156 to ensure removal of fines from the vicinity of the well screen and to bring formation water into the well. Before starting the well development activity, plastic sheets will be placed around the well to avoid contact between the equipment and the ground. At the beginning, the depth to the water surface and depth of the water column will be measured using a water level indicator. Water will then be withdrawn from the well using a submersible pump or a bailor until the water is clear and appears to be free of sediment. All water generated will be containerized and left on site for future disposal. All required information, as per the SOP, will be logged in the log book.

5.6.5.3 Well Purging and Sample Collection

Groundwater will be collected following OSWER Directive 9360.4-03, SOP #2007. Before starting the sampling activity, plastic sheets will be placed around the well to avoid contact between the sampling equipment and the ground. After the water level stabilizes, the depth of the water column will be measured using a water level indicator, and the volume of water in the well will be calculated. The well will then be purged three well volumes or to dryness using a precleaned bailor. After the well recharges, a total of two 1-liter amber bottles of water will be collected using a bailor. The lids of the bottles will be secured tightly, and the sample number will be marked on the outside of the bottles. The sample number, location, name of the sampler, and the date and time of sampling will be recorded in the log book. The purged water will be collected for future disposal.

5.6.6 Wipe Sample Collection

Wipe samples will be collected from smooth and impervious surfaces by using a 10 centimeter (cm) by 10 cm gauze pad. Enough laboratory grade hexane will be added to the sampling jar to dampen the wipe pads. The moistened gauze pad will be held with a pair of clean stainless steel forceps and used to thoroughly swab a 50 cm by 50 cm area as measured by a sampling template. The gauze will be first moved horizontally and then vertically with even strokes. A second wiping of the surface will be done using a clean portion of the same pad. Care will be taken to assure proper use of the sampling template. The sampling template will be used once and then

PFE ORIGINAL

DRAFT

properly disposed. A new sample template will be used at each sampling location.

5.6.7 Floor Dust Sample Collection

The floor inside the Shaffer Electric Building will be divided into 6 sections. Dust samples will be collected from each section using a hand held vacuum cleaner with a disposable dust collector (disposable vacuum cleaner bag). The sample will be transferred from the dust collector into a precleaned 8-ounce sampling jar and tightly secured with a lid. The sample number will be marked on the jar. Unless otherwise specified, one 8-ounce sample will be collected at each location. The sample number, location, name of the sampler, and the date and time of sampling will be recorded in the log book.

5.6.8 Microorganism and Fish/Turtle Sample Collection

Fish/turtle samples will be collected from the Arbuckle Creek for tissue bioassay using an appropriate device used by WVDEP, who will assist the OSC in collecting the samples. The fish/turtles will be wrapped in aluminum foil and immediately frozen on dry ice for total body analysis of PCBs. The amount of sample to be collected will depend on the availability of fish/turtle. The sample number, location, name of the sampler, and the date and time of sampling will be recorded in the log book. If collection of microorganism samples is necessary, WVDEP will determine the method of collection. A biologist will be assigned to each crew and will be responsible for monitoring all sampling activities.

5.6.9 Rinsate Blank Collection

Rinsate samples will be collected following OSWER 9360.4-10 section 5.4.4. After decontaminating the sampling equipment as described in Section 5.8 of this plan, the equipment will again be rinsed with distilled water. Two 1-liter amber bottles of rinsate will be collected per piece of equipment. The lids of the container will be secured tightly, and the sample jars will be marked with the sample number. The sample number, location, name of the sampler, and the date and time of sampling will be recorded in the log book.

5.6.10 Duplicate Sample Collection

Duplicate soil and sediment samples will be collected following OSWER Directive 9360.4-10, Section 4.6. After

DRAFT

collection and homogenization of samples in a homogenization container, two sets of jars will be filled simultaneously with alternate scoopfuls of samples. The lids of the container will be secured tightly. The sample jars will be marked with two distinct sample numbers. The sample number, location, name of the sampler, and the date and time of sampling will be recorded in the log book.

5.7 Quality Control of Field Activities

The lead TAT on site will be responsible for ensuring that sample quality and integrity are maintained, and that sample labeling and documentation are properly performed. The lead TAT will be assisted by a chemist experienced in QA/QC and sample management.

5.8 Decontamination

All tools and equipment that will not come in contact with the sampling media will be decontaminated using dry decontamination techniques. All large pieces of equipment that will come in contact with the soil will be steam cleaned. All small sampling equipment will be cleaned with Alconox and distilled water, rinsed with distilled water and dried. The equipment will be visually inspected to ensure that all soil particles have been removed. All decontamination water and disposable equipment generated will be collected and left on site for future disposal.

Decontamination procedures for personal protective equipment (PPE) are designed to minimize risk of exposure of personnel to hazardous substances. Decontamination will be performed in accordance with the Site Health and Safety Plan (SHSP). The emergency decontamination guidelines are also given in the SHSP.

5.9 Handling of "Investigation-Derived Waste"

Cuttings from soil borings will be placed near the borings unless they are noticeably contaminated. Noticeably contaminated soils will be placed in drums and staged for future disposal. All field tested samples with less than 10 ppm of PCBs that are not sent to the laboratory will be returned to their respective locations. Well development, purge, and decontamination water, and all PPE will be stored on site in drums for future disposal. All waste generated during the field testing of samples will also be stored in drums for future disposal.

PFE ORIGINAL
DRAFT

All investigation-derived waste generated during the implementation of this plan will be sampled and properly disposed of based on the analytical results, and current EPA and West Virginia regulations and policies.

5.10 Sample Management

5.10.1 Management of Samples in the Field

Sample volumes, appropriate containers and preservatives required for each sampling media have been presented in Section 5.6. All sampling containers will be pre-cleaned and sealed in cartons by lot number.

A field log book will be maintained during the ECS. Each sample location will be provided with a unique number. The samples will be numbered according to Attachment 8 of this plan. The sample number, location, depth of sample (for soil), name of the sampler, date, time of sampling, weather conditions, any unusual sampling conditions, well purging data for groundwater, boring data for soil boring, etc., will be recorded in the log book. Photographs of selected sampling locations will be obtained and stored for future reference.

After each sample is collected, the lid of the container will be tightly secured, any visible contamination on the outside of the jar will be removed with a water and Alconox solution, and the jars will be rinsed with distilled water and dried. If there is no visible contamination, the outside surface of the sample jar will be thoroughly wiped off using paper towels.

After decontamination, proper labels and tags will be affixed to each jar. The label on each sample container will record the following information: name of the sampler, date and time sample was obtained, sample number or designation, site name, preservatives, and required analysis. This information will also be transferred to the chain-of-custody forms to be included with each shipment of samples. The sampling jars will then be placed in plastic zip-lock bags and packed into a cooler with ice. At the end of each day, the coolers will be sealed with custody seals.

The samples to be shipped for laboratory analysis will be packed in appropriate shipping containers with vermiculite and ice. Chain-of-custody forms will be completed and affixed to the inside of the shipping containers. The containers will be bound with strapping tape to prevent loss of samples, properly

DRAFT

placarded and sealed with custody seals. The containers will either be hand delivered or shipped to the laboratories for PCB analysis.

5.10.2 QA/QC Samples

Sufficient quality control (QC) samples will be obtained during the ECS to ensure that proper data is available for subsequent data validation purposes and the data obtained during the study is meaningful. A minimum of one QC sample will be prepared for every 20 field samples collected. Details of the QC sample collection are as follows:

5.10.2.1 Field QC Blanks

Field blanks will be used to determine whether contamination is introduced from the sample containers during transport to site and storage at the site. These blanks will be prepared using distilled/deionized water of known high purity in the field. One 1-liter amber bottle of field blank will be prepared per trip per sampling media except for water samples.

Rinsate blanks will be used to determine whether contamination is introduced from the sample collection equipment. A rinsate blank will be collected from the split spoon, the hand auger, and bailer to meet the QA Level II objectives. After decontaminating the sampling equipment as described in Section 5.8 of this plan, the equipment will again be rinsed with distilled water. Two 1-liter amber bottles of rinsate will be collected per equipment.

5.10.2.2 Duplicate Samples

Duplicate samples will be used to evaluate the precision of chemical analyses and the reproducibility of field sampling. Field duplicate samples will be collected from the preselected locations by collecting an extra set of samples for each parameter. The duplicate samples will be collected at approximately 5 per cent of the total number of field samples for every sampling media.

5.10.2.3 Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike (MS) samples will be used to monitor the recovery rate for the spike chemicals within the assigned EPA analytical method. These results will indicate the accuracy of the laboratory analysis. The samples will be spiked in the laboratory with a predetermined concentration of known

DRAFT

PFE ORIGINAL

chemicals before analysis.

Matrix spike duplicate (MSD) samples will be used to monitor the accuracy and precision of the laboratory procedures. MSD samples will be analyzed in the identical manner as the associated MS sample and a relative percent difference (RPD) value will be calculated.

One of each of the soil and sediment samples to be sent out for laboratory analysis will be marked for matrix spike/matrix spike duplicate (MS/MSD) analysis. For the water samples, double the sample volume required for the assigned methods will be provided from the field for MS/MSD samples. MS/MSD samples will be collected at a rate of one per 20 samples per sample matrix.

5.10.3 Analytical Parameters

MATRIX	PARAMETER	TEST METHOD	DETECTION LIMIT
Soil/sediment	PCBs	ENSYS PCB Test Kit	10 mg/Kg
Soil	TPH	Test Kit	10 mg/Kg
Soil/sediment	PCBs	EPA Method 3550/8080	1 mg/Kg
Water	PCBs	EPA Method 508	0.02 ug/L
Floor dust	PCBs	EPA Method 3550/8080	1 mg/Kg
Rinsate	PCBs	EPA Method 508	0.02 ug/L
Concrete	PCBs	EPA Method 3550/8080	1 mg/Kg
Wipe	PCBs	EPA Method 3580/8080	1 ug/sq cm
Fish/Turtle	PCBs	EPA Method 3540/8080	0.04 ug/Kg
Field Blank	PCBs	EPA Method 508	0.02 ug/L

5.10.4 Field Testing of Samples

All soil, sediment, and floor dust samples will be tested in the field using Ensys PCB test kits following the procedures described in the user's guide. In addition to PCB testing, all soil samples collected from the pit area will be field tested for total petroleum hydrocarbon (TPH) using a TPH test kit following the prescribed procedures. All wet samples will be dried using a microwave oven before field testing. All test results, names of the persons performing the testing, and the date of testing will be recorded in the log book. At least 10 per cent of the field tested samples will be randomly retested using the field test kits for confirmation.

DRAFT

5.10.5 Sample Tracking

All samples will be provided with a unique sample number. The sample number, location, name of the sampler, and the date and time of sampling will be recorded in the log book. After completion of sampling, the sample location map (Map 18) will be modified as necessary to represent the actual sampling event. The samples which indicate more than 10 ppm of PCBs in the field testing, will be sent to an outside laboratory for confirmation analysis. At least 10 percent of the samples that test less than 10 ppm will also be sent to an outside laboratory for confirmation analysis. The water, concrete, wipe, and rinsate samples will also be sent to an outside laboratory for PCB analysis. Chain-of-custody forms will be assigned for these samples and will be affixed inside the shipping containers during shipment to the laboratory. The TAT site lead will keep track of the samples. After receiving the analytical results, the data will be summarized in tabular form.

5.11 Data Quality Requirements and Data Validation

QA Level II QC criteria will be followed for all samples to be tested. The samples which indicate more than 10 ppm of PCBs in the field testing, will be sent to an outside laboratory for confirmation analysis. At least 10 percent of the samples that test less than 10 ppm will also be sent to an outside laboratory for confirmation analysis. Quality assurance for the samples to be analyzed in an outside laboratory will consist of a matrix spike and a matrix spike duplicate (MS/MSD) per matrix, surrogate spike recoveries per sample and method blanks analyzed per matrix. The detection limits, quantitation limits, estimated accuracy, accuracy protocol, estimated precision, and precision protocol will be maintained within the limits of the EPA 8080 and 508 test methods. The detection limit for the water samples will be 0.02 microgram per liter (ug/L). This is the lowest achievable detection limits possible for PCBs in water according to the Quality Assurance Branch of the Central Regional Laboratory for EPA Region III in Annapolis, Maryland.

After receiving the analytical results from the laboratory, TAT will perform data validation according to the Quality Assurance/Quality Control Guidance for Removal Activities, EPA/540/G-90/004, April 1990.

PFE ORIGINAL

DRAFT

6.0 SITE HEALTH AND SAFETY PLAN

The Site Health and Safety Plan (SHSP) prepared by TAT for the site activities during October-November 1993, will be modified and used for this ECS. The SHSP will be implemented as applicable to the various activities on site. All personnel working on site must be trained in accordance with 29 CFR 1910.120. All personnel must read, understand, and sign the SHSP before working in the potentially contaminated areas on site and follow the SHSP. The Site Health and Safety Officer will be responsible for implementation of the SHSP. Additional details on personnel requirements are presented in the SHSP.

6.1 Site Hazards

The primary potential chemical hazards for site activities are the presence of airborne particles and surface soil that may contain PCBs. The physical, chemical, and toxicological characteristics of PCBs are described in the SHSP. The physical hazards on site are common construction hazards, with the primary hazards being moving equipment, falls, tripping and extreme weather conditions.

6.2 Personnel Protective Equipment

Inhalation, ingestion and dermal contact are the major routes of exposure. It is anticipated that soil disturbance will be minimal during the site activities covered under this work plan. Modified level D will be appropriate for the site activities. This includes Saranex, booties, surgical and rubber gloves, safety boots, safety glasses, and hard hats. During the operation of the drill rig, ear plugs will be used. In addition, during field testing of the samples, face shields and bib-type aprons that cover boot tops will be worn. In case any site operation generates dust, air monitoring will be conducted in the area of operation to measure dust content, and, if necessary, the level of protection will be upgraded and dust control measures will be implemented. The decision for changing the level of protection will be made by the Site Health and Safety Officer.

DRAFT

7.0 REPORTS

Information gathered from this ECS will be compiled in a Trip Report. The report will include the following:

- o PCB concentration data collected during this ECS including the data collection methods, sample location map, and data summary tables.
- o A section summarizing all findings in respect to each item mentioned in the objective section of this plan.

8.0 IMPLEMENTATION SCHEDULE

Depending on the availability of the sub-contractor and equipment, the proposed plan will be implemented sometimes from the middle to the end of August 1994. The exact date will be decided by the OSC.

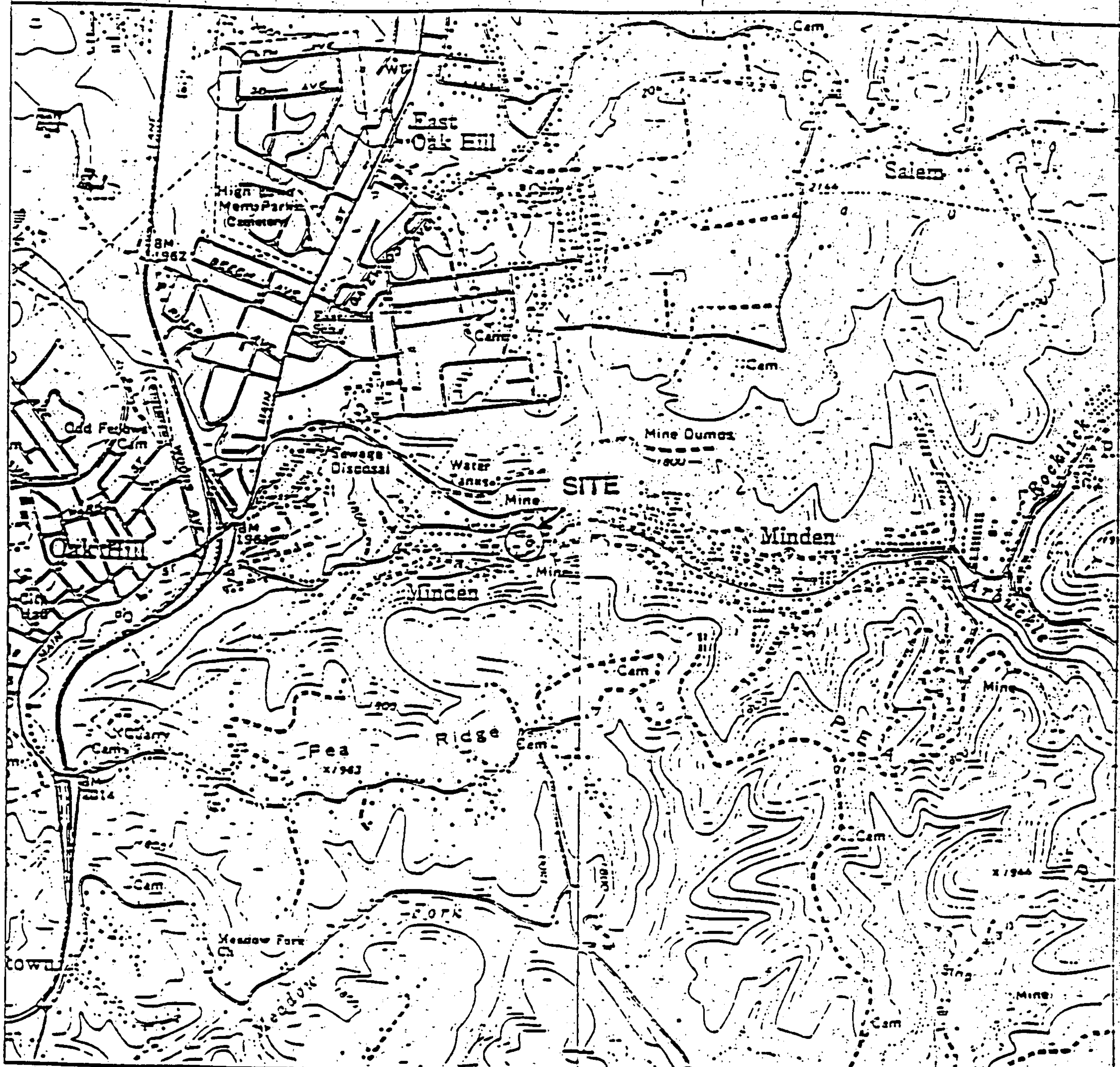
EPA and TAT personnel will implement the work plan, and representatives of CCSFC will be requested to participate as observers. City, county and WVDEP representatives will also be asked to participate.

ATTACHMENT 1

FIGURE - 1

WESTON MAJOR PROGRAMS DIVISION

TDD Number: 9307-27C
PCS Number: 5010



SITE LOCATION MAP

SHAFFER ELECTRIC COMPANY SITE
MINDEN, FAYETTE COUNTY, WEST VIRGINIA

USGS 7.5 MINUTE OAK HILL AND THURMOND, WV QUADRANGLE
SCALE 1:24 000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETRE

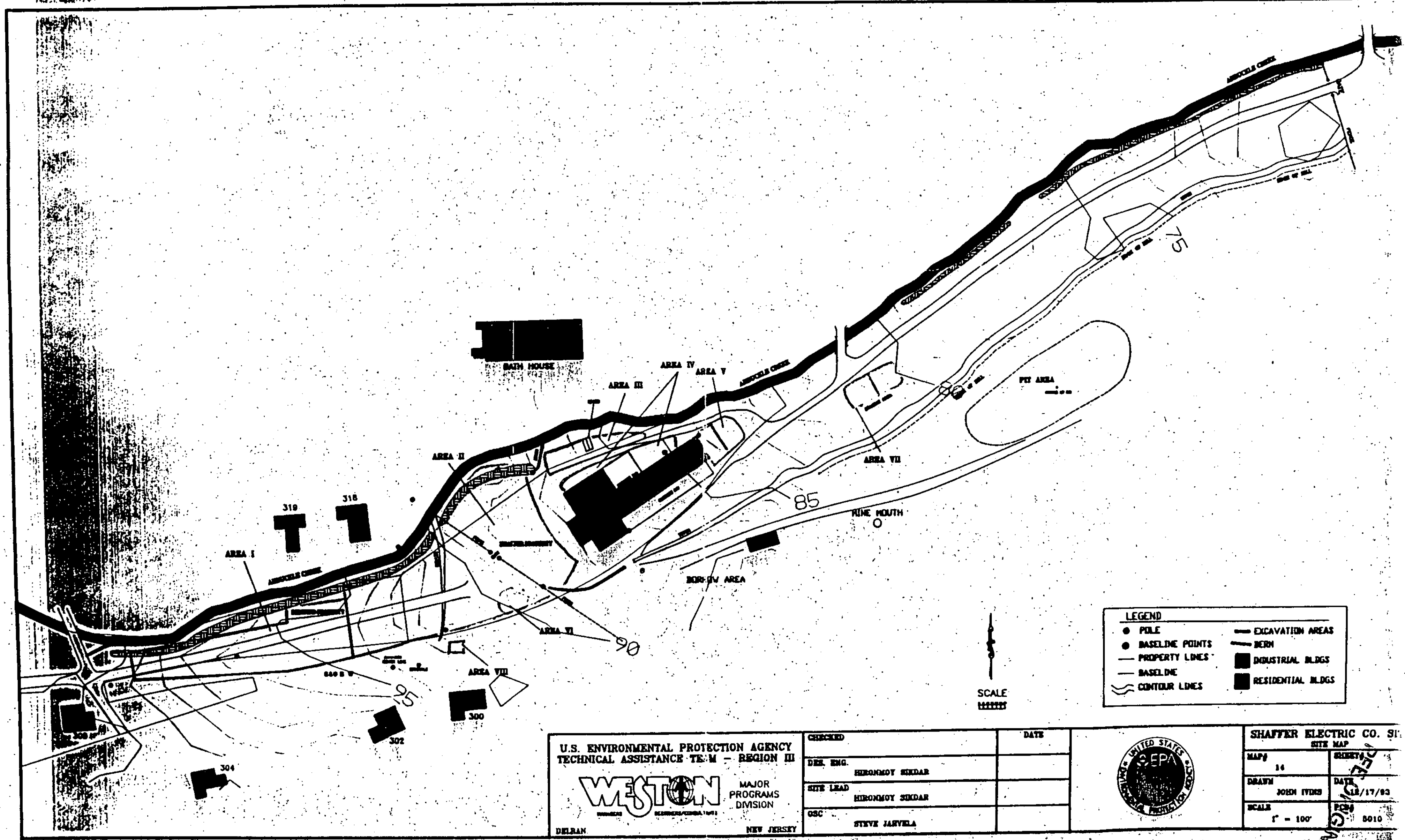
MN GN 80 MILS 1 MIL

1978 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

QUADRANGLE LOCATION

PFE ORIGINAL

ATTACHMEI. 2


BATH HOUSE
AREA I
AREA II
AREA III
AREA IV
AREA V
AREA VI
AREA VII
AREA VIII
PIT AREA
BORROW AREA
MINE MOUTH
319
318
300
302
304
75
85
90
95
SCALE
LEGEND
POLE
BASELINE POINTS
PROPERTY LINES
BASELINE
CONTOUR LINES
EXCAVATION AREAS
BERM
INDUSTRIAL BLDGS
RESIDENTIAL BLDGS
U.S. ENVIRONMENTAL PROTECTION AGENCY
TECHNICAL ASSISTANCE TEAM - REGION III
WESTON
MAJOR PROGRAMS DIVISION
DELRAN
NEW JERSEY
CHECKED
DATE
DES. ENG. HIRONMOY SIKDAR
SITE LEAD HIRONMOY SIKDAR
OSC STEVE JARVELA
SHAFFER ELECTRIC CO. SI
SITE MAP
MAP# 14
DRAWN JOHN IVDES
DATE 12/17/93
SCALE 1" = 100'
PCS# 5010
ORIGINAL

PFE ORIGINAL

ATTACHMENT 3

GEOLOGICAL SURVEY REPORT

I. Regional and Site Geology

The geology of the Site is characterized by the geologic unit, New River Formation, of the Pottsville Group, of the Pennsylvanian System. This rock unit is predominantly sandstone, with some shale, siltstone, and coal seams. The slope of the unit is variant, from zero to four percent, dipping northwesterly. The Site lies on the alluvial plain of the Arbuckle Creek, consisting of loosely consolidated sediments (overburden), ranging in depths of approximately four to twenty feet. This alluvium is truncated at the valley slopes on either side of the Arbuckle Creek. Initial investigation suggests that the limit of surface unconsolidated sediments nearly coincides with the southern drainage ditch on site, found at the base of the hill slope, where loosely consolidated sediment is found to decrease in depth as the elevation increases up the hill slope. Beneath the unconsolidated overburden, lies bedrock of the New River Formation. On site, excavated overburden was replaced with approximately two feet of coal slag and sandy fill in 1987. A berm of similar fill was constructed to control flooding across the surface of the Site from the Arbuckle Creek and to prevent runoff from crossing the Site and entering the stream.

Three coal seams, the Beckley, the Sewell, and the Fire Creek, upper to lower respectfully, can be found regionally in the site area. The Beckley seam is nearly pinched-out, and is structurally and topographically above the site. The Sewell seam was extensively mined out during the early 1900's in the immediate proximity of the Site, within the valley slopes of the Arbuckle Creek by Minden Mines #2, #3, #4, and #5. Initial geologic investigation of available maps and documentation indicate that the entrance to Minden Mine #3, at the Sewell coal seam is structurally and topographically above the Site, (see Geologic Cross-Section A-A'). Structurally, the Sewell coal seam has a strike of North 31 degrees East, and dips approximately 0.86 degrees to North in the proximity of the Site. Subsequent field investigation should verify these relationships. The Sewell seam (abandoned Minden Mine #3) is a public water supply source for the West Virginia American Water Company, approximately 1.5 miles west of the Site, in Oak Hill, West Virginia, (see Geologic Cross-Section B-B'). The Sewell seam is upgradient of the Site to the ENE, at the Arbuckle Public Service District's water source at Rock Lick Spring, (see Geologic Cross-Section C-C'). The elevations of the Minden Mine portals from the West Virginia Geological Survey predate current U.S. Geological Survey data and required adjustments, as per WVDEP, Office of Mining and Office of Abandoned Mines personnel agreement. The Fire Creek seam underlies the Site, but has not been mined directly beneath the Site.

Soil characteristics of the Site soils are derived from the U.S. Department of Agriculture, Soil Conservation Service, Soil Classification Index, depicting the soil as being from the Philo Series. An important characteristic of these moderately well-drained soils is its capability of being flooded frequently. Natural depth usually exceeds four feet in stream and valley basins. The coal slag and sediment backfilled into the pit area is of unknown depth and not well compacted, suggesting a high rate of permeability and a susceptibility to a high rate of erodibility.

Geophysical and structural geology of the Site area is not well defined or documented, although slopes of the bedding planes trend to dip 0-4% to the northwest. The existence and degree of fracturing in the bedrock is not specifically known. However, compressional fractures (nearly horizontal) are parallel to bedding planes in the basin area of the Site, due to erosional downcutting by the Arbuckle Creek, and unloading of removed alluvial deposits formerly overlying bedrock. Tensile fractures are more common in the bedrock of the hillside slopes and uplands, providing groundwater recharge in the vertical direction until intersecting fractures that are hybrids of the two fracture sets (compressional and tensile).

II. Groundwater Study

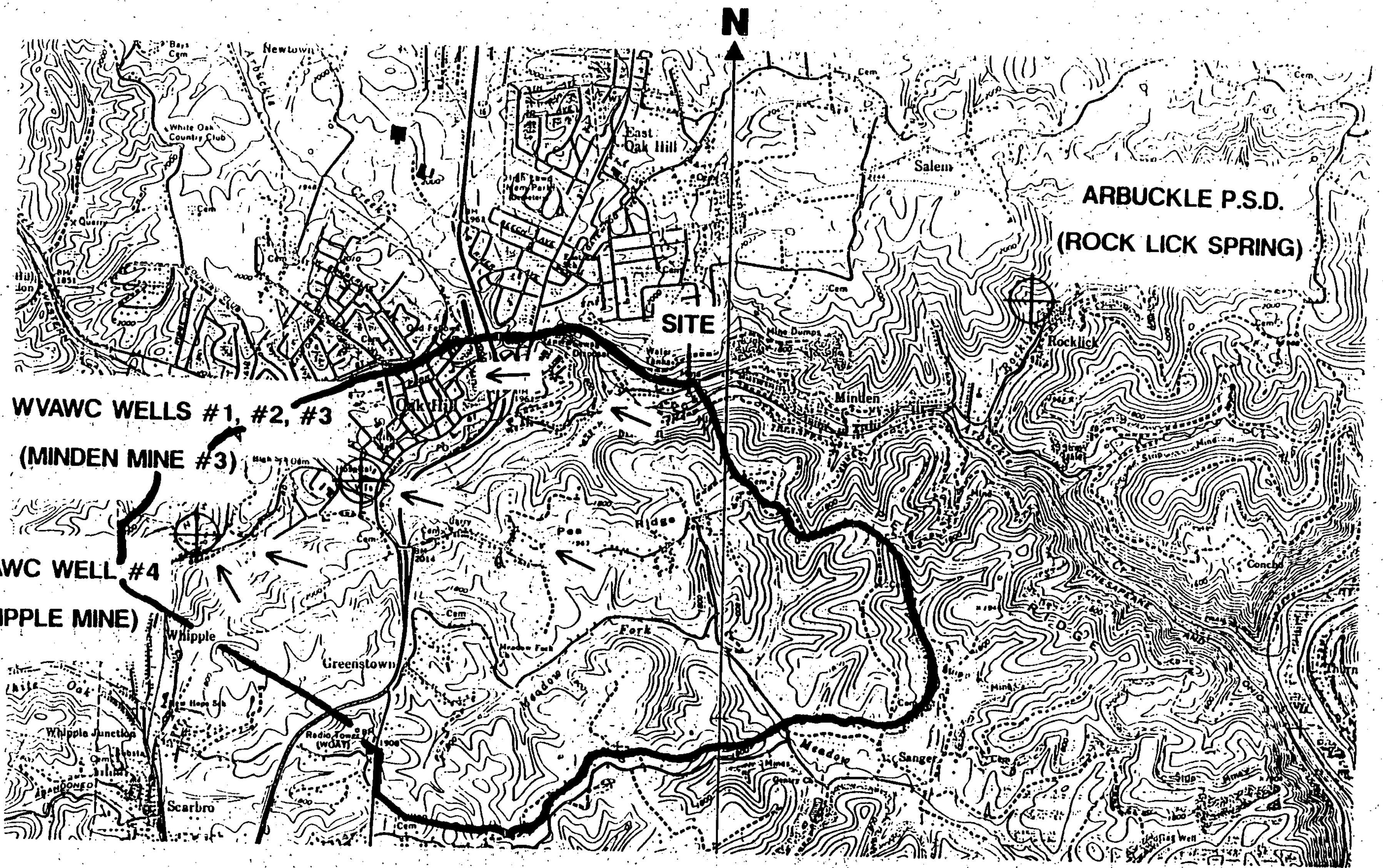
Information concerning the Site hydrogeology is general, but Site specific data will be augmented by means of subsequent investigations. The surface of the Arbuckle Creek, bordering the northern edge of the Site, is an expression of the unconfined (water-table) aquifer system. The Arbuckle Creek flows ENE, past the Site, setting a groundwater hydraulic gradient in the same direction, expressing primary permeability through unconsolidated overburden. This hydraulic gradient has been verified by TAT piezometer installation and measurements in October 1993. Secondary permeability, or movement of fluid through bedrock linear structures (fractures, faults, and bedding planes) is more significant than primary permeability in regard to groundwater flow direction and linear discharge rates. Because secondary permeability controls preferential flow at depth, mapping of linear structures in bedrock would be essential in determining groundwater flow through bedrock. If the fate of contaminant transport exists below unconsolidated overburden and through bedrock, further geophysical investigations may be warranted.

PFE ORIGINAL

Attachments:

1. Well Head Protection Area, Oak Hill, WV
2. Map View Index to Geologic Cross-Sections Passing thru Shaffer Electric Site
3. 4890-Foot Geologic Cross-Section, including Shaffer Electric Site
4. 4890-Foot Geologic Cross-Section, including Shaffer Electric Site
5. 4890-Foot Geologic Cross-Section, including Shaffer Electric Site
6. Contacts and References for Geologic Investigation

Wellhead Protection Area, Oak Hill, Fayette County, West Virginia as Designated by the West Virginia Bureau of Public Health, Office of Environmental Health Services, Sept. 29, 1993 (Oak Hill and Thurmond Quadrangles)



WESTON
5 Underwood Court, Delran, New Jersey 08075-1229
609-461-4003 • 215-238-0338 • Fax 609-461-4916

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036

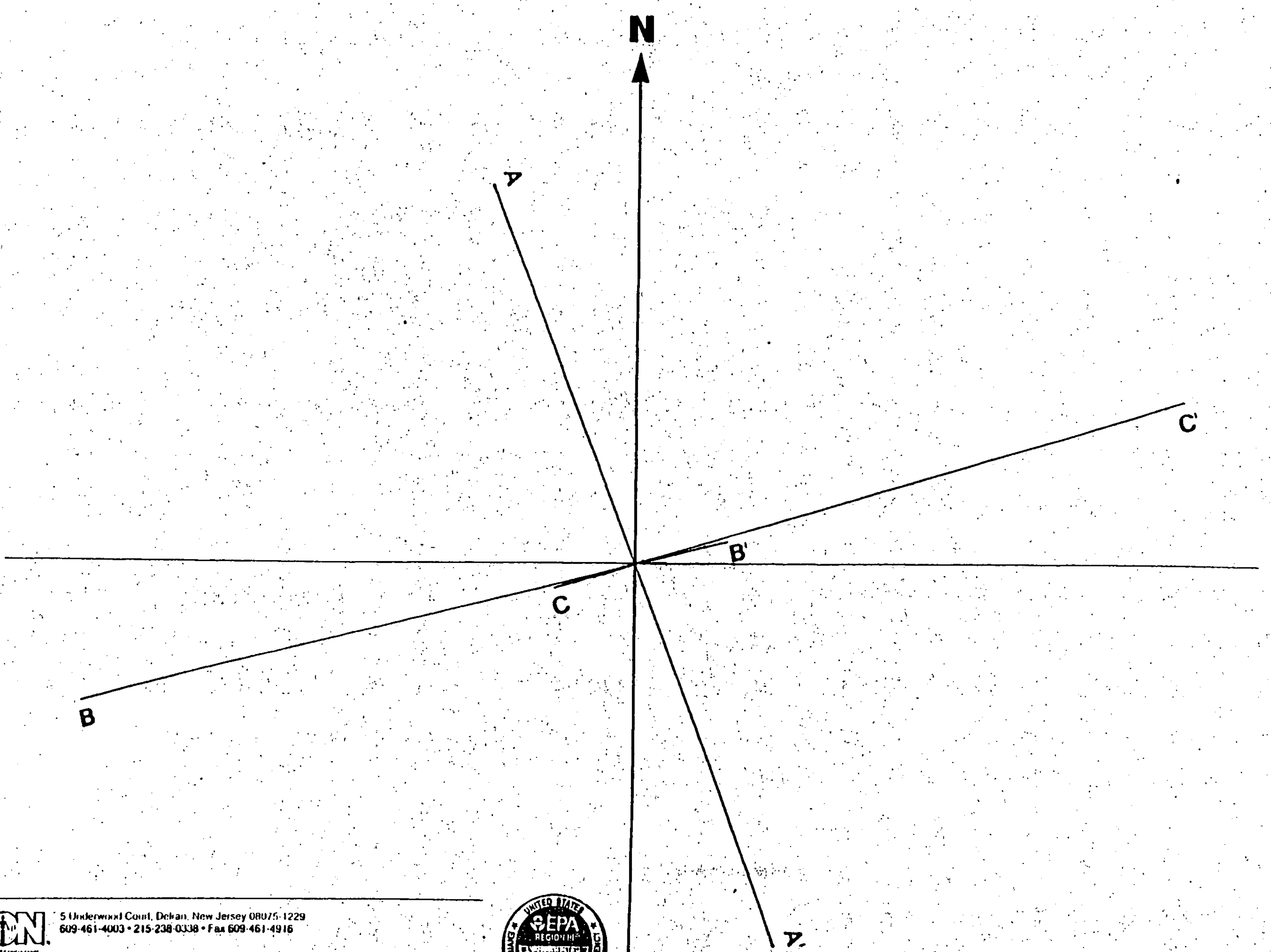
Note: Arrows indicate groundwater flow within the Sewell Coal Seam (Minden and Whipple Mines)

Prepared: June 23, 1994

PFE ORIGINAL

Map View Index To Geologic Cross-Sections Passing Thru The Shaffer Electric Site

A--A' : N21°W to S21°E -- Minden Mine #4 to Minden Mine #3
B--B' : S76°W to N76°E -- West Virginia-American Water Co. Source to Site
C--C' : S74°W to N74°E -- Site to Arbuckle Public Service District Water Source
Origin -- Site Area



WESTON
5 Underwood Court, Delran, New Jersey 08075-1229
609-461-4003 • 215-238-0338 • Fax 609-461-4916

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036

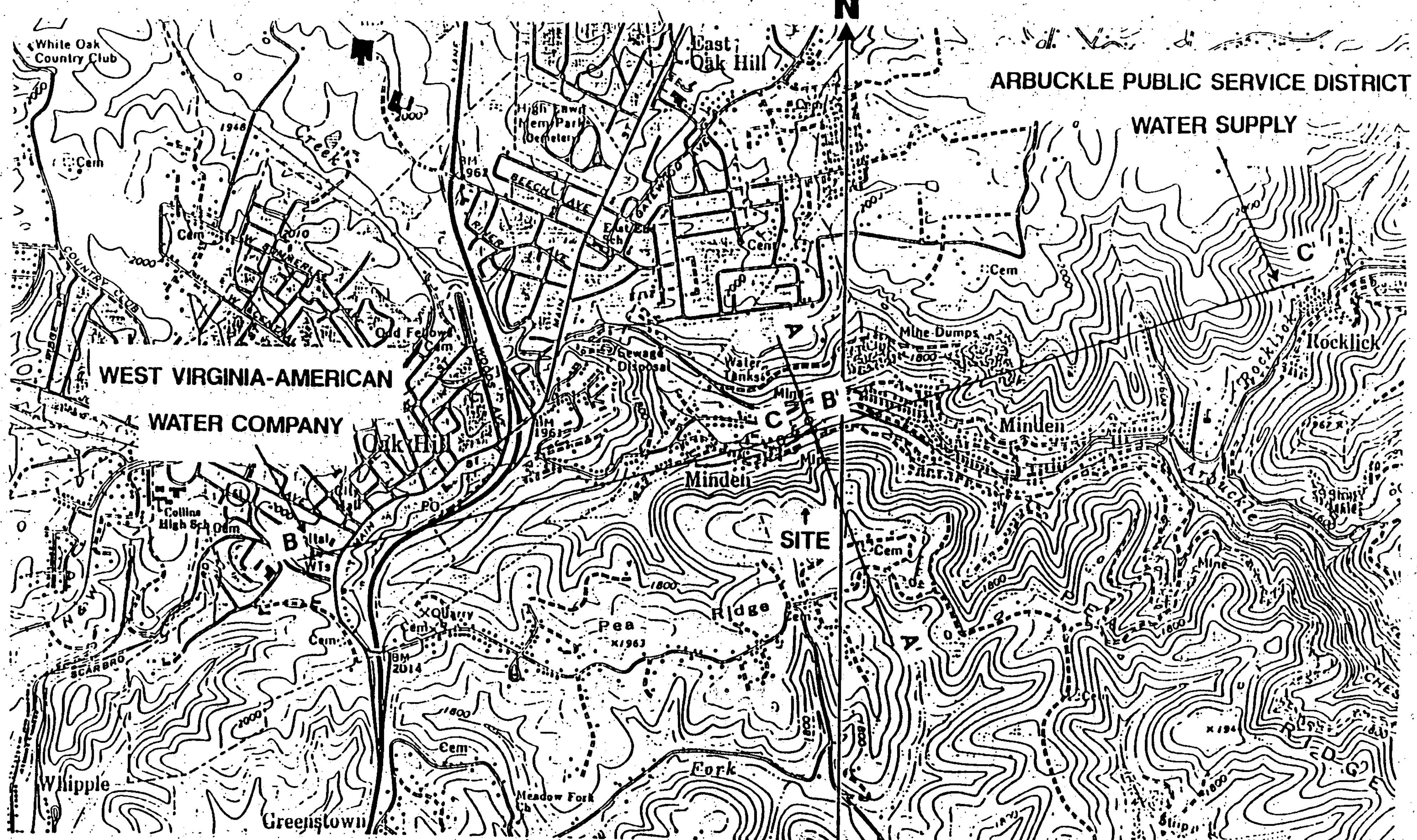
UNITED STATES EPA REGION III EMERGENCY RESPONSE TEAM ENVIRONMENTAL PROTECTION AGENCY

Prepared: June 23, 1994

PFE ORIGINAL

Map View Inc[illegible] The Geologic Cross Sections Passing Thru The Shaffer Electric Site

A--A' : N21°W to S21°E -- Minden Mine #4 to Minden Mine #3
B--B' : S76°W to N76°E -- West Virginia-American Water Co. Source to Site
C--C' : S74°W to N74°E -- Site to Arbuckle Public Service District Water Source
Origin -- Site Area

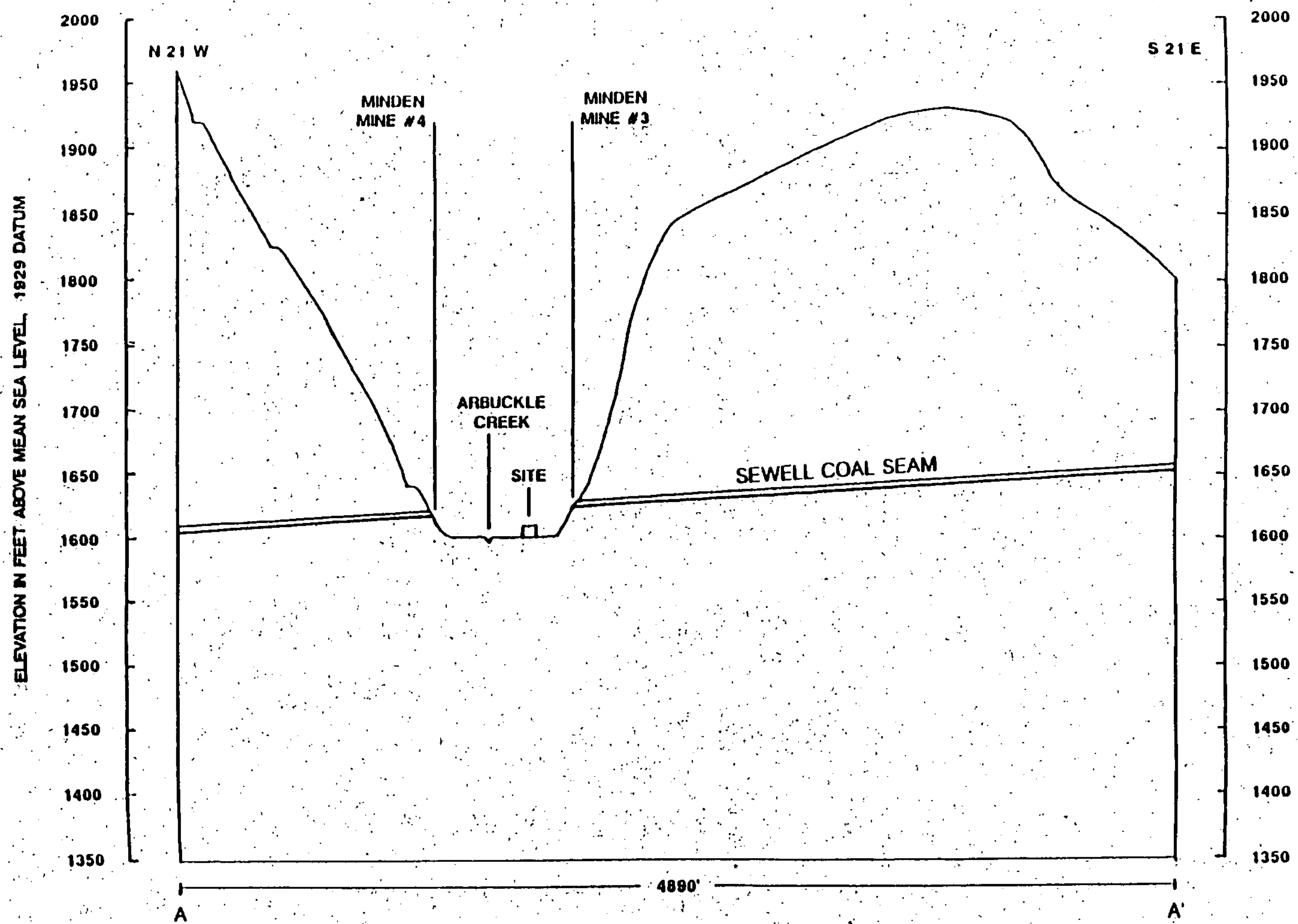


WESTON
5 Underwood Court, Delran, New Jersey 08075-1229
609-461-4003 • 215-238-0338 • Fax 609-461-4916

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036

Prepared: June 23, 1994

PFE ORIGINAL



4890-FOOT GEOLOGIC CROSS-SECTION, INCLUDING THE SHAFFER ELECTRIC SITE

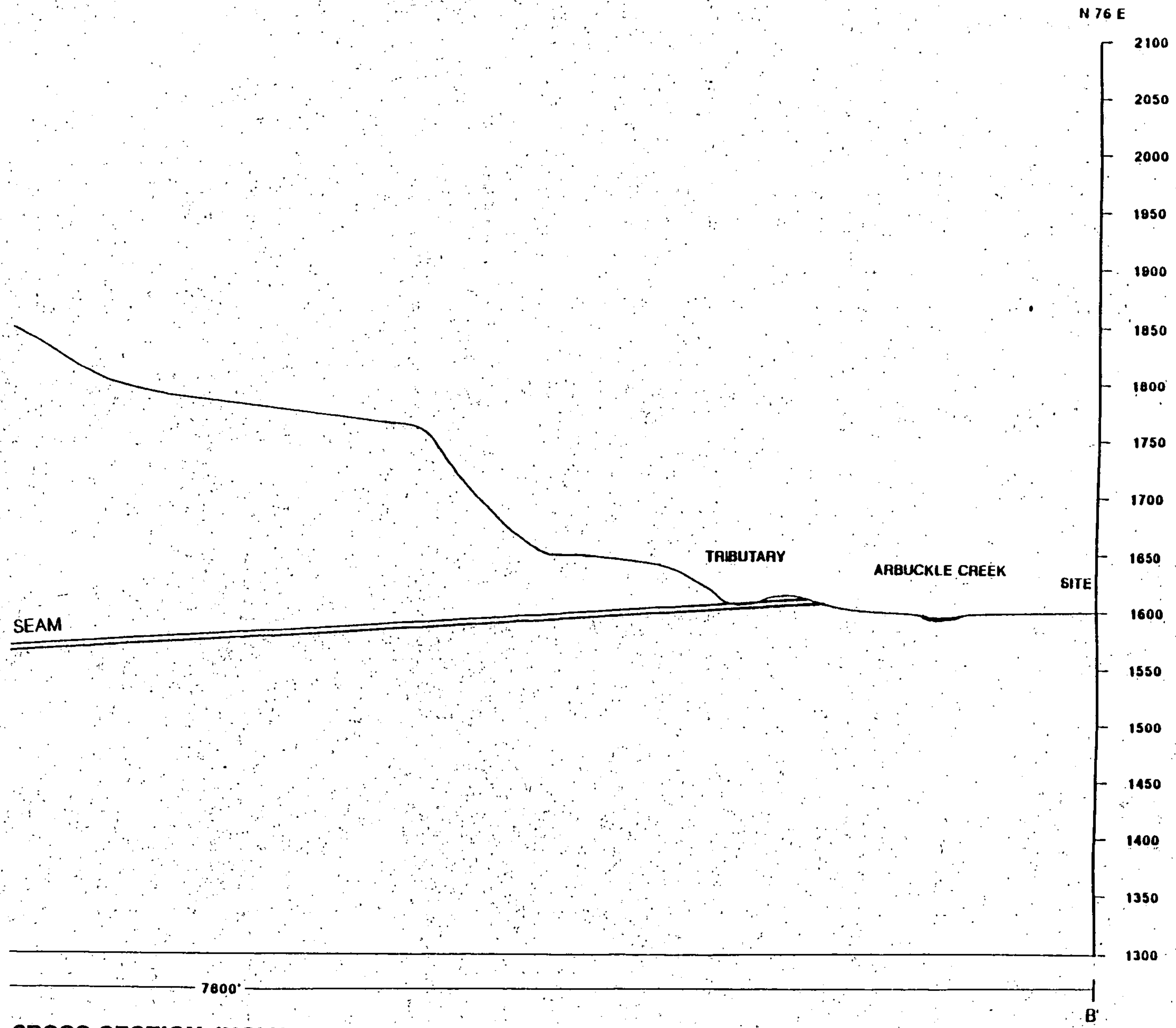
TREND: N 21 W TO S 21 E

VERTICAL EXAGGERATION : 5.0

WESTON
5 Underwood Court, Delran, New Jersey 08075-1229
609-461-4003 • 215-238-0338 • Fax 609-461-4916

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036

PFE



CROSS-SECTION, INCLUDING THE SHAFFER ELECTRIC SITE

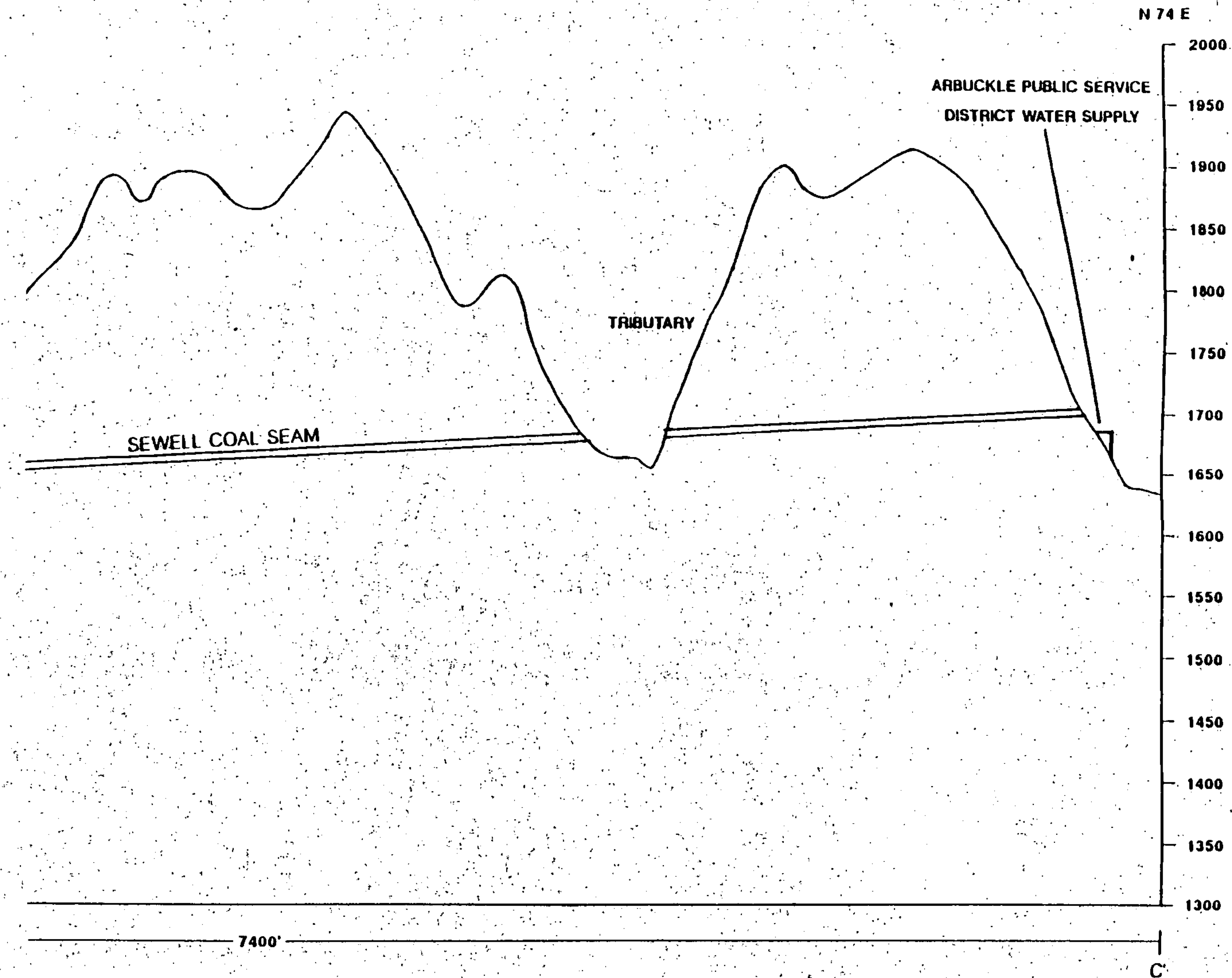
N 76 E

TION : 5.0

WESTON

5 Underwood Court, Delran, New Jersey 08075-1229
609-461-4003 • 215-238-0338 • Fax 609-461-4916

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036



CROSS-SECTION, INCLUDING THE SHAFFER ELECTRIC SITE

74 E

ION : 5.0

WESTON
5 Underwood Court, Delran, New Jersey 08075-1229
609-461-4003 • 215-238-0338 • Fax 609-461-4916

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0036

PFE ORIGINAL

CONTACTS AND REFERENCES FOR GEOLOGIC INVESTIGATION

Contacts

Arbuckle Public Service District (Water Supply for Minden)
Minden, West Virginia
Joseph Carter, Production Supervisor
(304) 465-8600

Fayette County Health Department,
Fayetteville, West Virginia
Mike Sale
(304) 574-1617

U.S. Geological Survey, Water Resources Division
Charleston, West Virginia
Mark Kozar, Hydrogeologist
(304) 347-5130

West Virginia American Water Company,
Oak Hill District
Oak Hill, West Virginia
Marshall Murray, Production Superintendent
(304) 465-0682, 1 (800) 685-8660

West Virginia Department of Environmental Protection,
Office of Mining
Nitro, West Virginia
William, "L.T.," Pack, Geologist
(304) 759-0512

West Virginia Department of Environmental Protection,
Office of Abandoned Mines
Oak Hill, West Virginia
George Jenkins, Geologist
(304) 465-1911

West Virginia Department of Health and Human Services,
West Virginia Bureau of Public Health,
Office of Environmental Health Services
Charleston, West Virginia
Gary Viola, Chief Engineer, P.E.
Lewis Baker, Wellhead Protection Geologist
Dave Thomas, District Engineer, Fayette County
(304) 558-2981

West Virginia Geological and Economic Survey
Morgantown, West Virginia
Ken Ashton, Geologist, P.G.
Dr. Jane McCulloch, Environmental Geologist
(304) 594-2331

PFE ORIGINAL

References

Availability of Low-Sulfur Coal in Fayette County, West Virginia, Hadley, Donald G., 1972, U.S.G.S.

Hydraulic Properties and History of Development of Lower Pennsylvanian Aquifers, Wilmoth, Benton M., 1967, West Virginia Academy of Science, Vol. 39.

Oak Hill, WV, Wellhead Protection Area (map), September 29, 1993, Fayette County, West Virginia Bureau of Public Health, Office of Environmental Health Services, Charleston, West Virginia.

Production Well Diagram for West Virginia American Water Company Wells #1, #2 & #3, (into Minden Mine #3), Oak Hill District, Oak Hill, West Virginia.

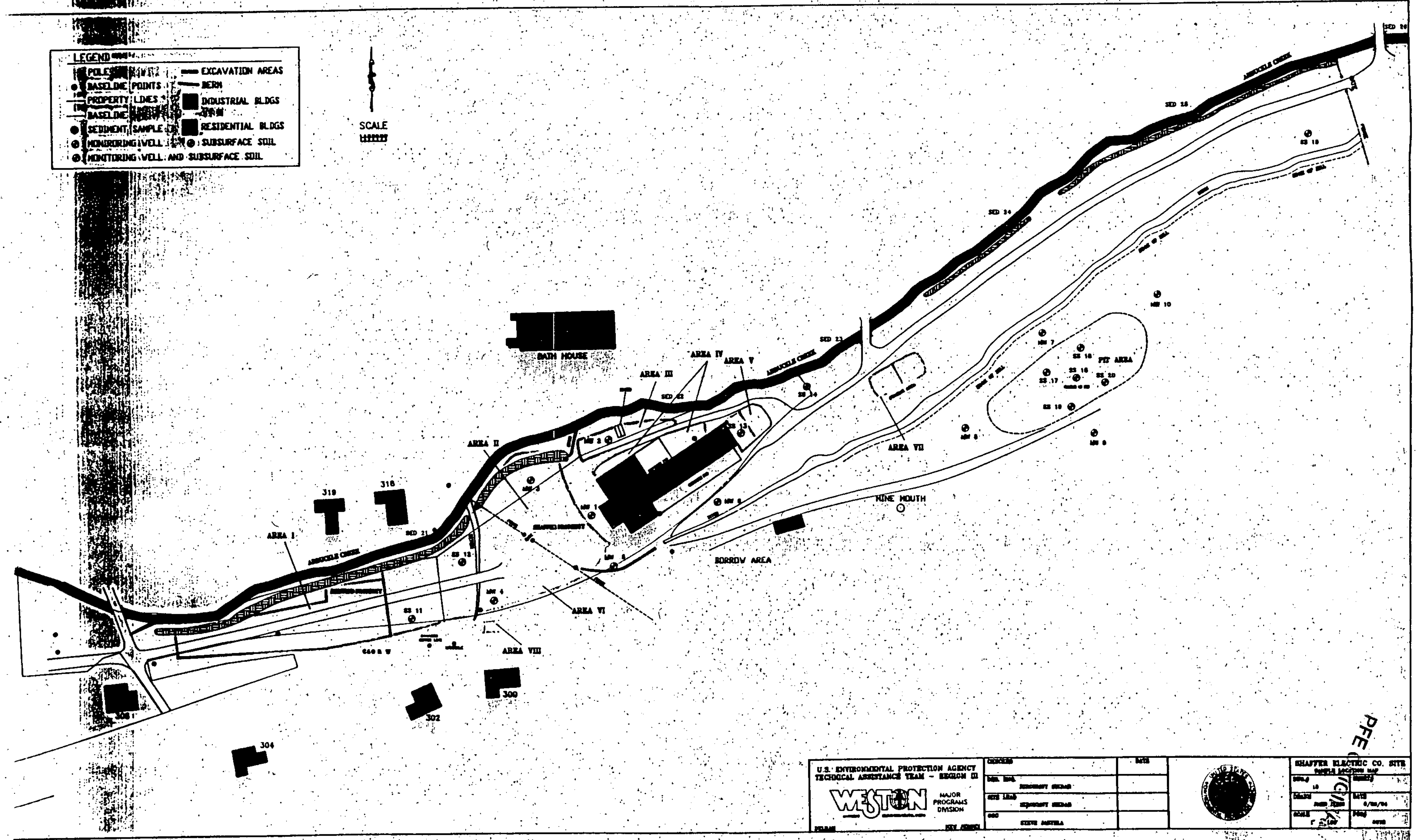
Springs of West Virginia, 50th Anniversary Revised Edition, McCulloch, Jane S., 1986, WV Geological and Economic Survey.

U.S. Geological Survey 7-1/2 minute topographical quadrangles (Oak Hill and Thurmond, WV), photo-revised 1976, 1929 datum.

West Virginia Geological Survey, Fayette County Report, Map II, Volume 19, 1919.

* Additional published materials to be identified at a later date.

ATTACHMENT 4



PFE ORIGINAL

DRAFT

ATTACHMENT 5

PIT AREA INVESTIGATION

Only limited information about the pit is available at the present time, i.e., the approximate location and depth of the alleged pit. Therefore, it may be useful to consider several possible scenarios on the past disposal of transformer oil into the pit area. The attached diagrams depict two possible scenarios. The third scenario lies in between the other two scenarios. The following discussion will elaborate on the patterns of contamination expected from each scenario. This information will also contain a list of the possible investigation techniques for the pit area. No information is available to consider in depth fate of contamination into the "hillside" but generalization will be used for the purpose of selecting an investigation technique.

Scenario #1

The first scenario will assume that the level of the coal refuse pile was at its current level at the time of the alleged dumping of PCB contaminated soils. Because the level is approximately 20-25 feet above the surface of the ground at the foot of the coal refuse pile, the bottom of the pit was above the estimated contour of the hill. Due to the large particle size of the coal refuse, and resulting high permeability, the oils would have migrated freely through the pile. Water would have flushed the oil downwards towards the ground's original contour and outward towards the drainage ditch.

PCB oils reaching the contour of the ground would have penetrated into the ground's surface, where the soil particle size decreases. Because of the increase in soil particle surface area, the PCBs would be more likely to adhere to and contaminate the soil. At the same time, PCB oils could have been flushed from the coal refuse pile and flowed overland to the drainage ditch and thus into Arbuckle Creek. The presence of free oils on the creek during past rain events was reported by residents.

DRAFT

Scenario #2

The second scenario will assume that the present level of the coal pile is higher than it was at the time of the alleged dumping. With the lower level, the estimated 14 foot depth of the pit could have extended into the estimated contour of the hill. All spilled oils would have collected in the bottom of the pit which would have been located within the natural soils.

PCB oil pooled in the depression in the soil would be able to penetrate into and adhere to the soil of the depression. Oil in the pit could have migrated overland when water from rainstorms filled the pit and raised the oil up into the more permeable cover of coal refuse. At this point, the oil could travel easily through the coal refuse along the contours of the hill. The result would also be the presence of free oil in the Arbuckle Creek during times of heavy rain.

Scenario #3

The final scenario (not diagrammed) lies between Scenarios #1 and #2. In this instance, the coal refuse pile height might have been less than at the present time. In any way, the bottom of the pit would have been located at the surface of the hill's natural contour.

PCB oils dumped into a pit of this construction would very likely penetrate into and adhere to the natural soils below the pit. Also, the lack of a depression into the natural formation would have allowed the oil to flow downhill (toward the drainage ditch and Arbuckle Creek) along the ground's contour through the porous coal refuse. This flow along the surface contour would be increased by the water flow through the coal refuse during rain events.

Investigation Techniques

When considering the expected PCB contamination at or under the alleged pit area there are three methods to consider; test hole, test trench, and boring. The advantages/disadvantages of each method are discussed below:

PFE ORIGINAL

DRAFT

Method #1 - Test Pit

A test pit excavation could be attempted in an area most likely to be the center of the alleged pit area. Accuracy in the selection of an area for a test pit could be enhanced by first delineating the boundaries of the pit area using geophysical techniques. The pit would give a point "snapshot" of general conditions in the area under the coal refuse pile likely to be contaminated.

Advantages
- Smaller amount of waste generated when compared to trench.
- Not affected by debris possibly used to fill pit.

Disadvantages
- Limited "view" could miss contamination "hot spot" from pit activities.
- Digging activities would generate "potentially contaminated" materials to handle.
- As depth of the test pit increases, the "hole" would become much larger for reasons of safety, increasing the volume of material to handle.

Method #2 - Test Trench

A test trench could be attempted along an axis of the alleged pit area. To further the scenario of developing an in-depth picture of subsurface contamination, a perpendicular bisector trench could be constructed along the other axis of the pit area. Again, a geophysical survey would be helpful in determining the boundaries of the pit and placement of the trenches.

Advantages
- Provides a cross-sectional view of the pit area along two perpendicular axes.

Disadvantages
- Large volume of "potentially contaminated" materials to handle.
- As depth of trench increases, shoring would become more difficult and less practical.

DRAFT

Method #3 - Boring

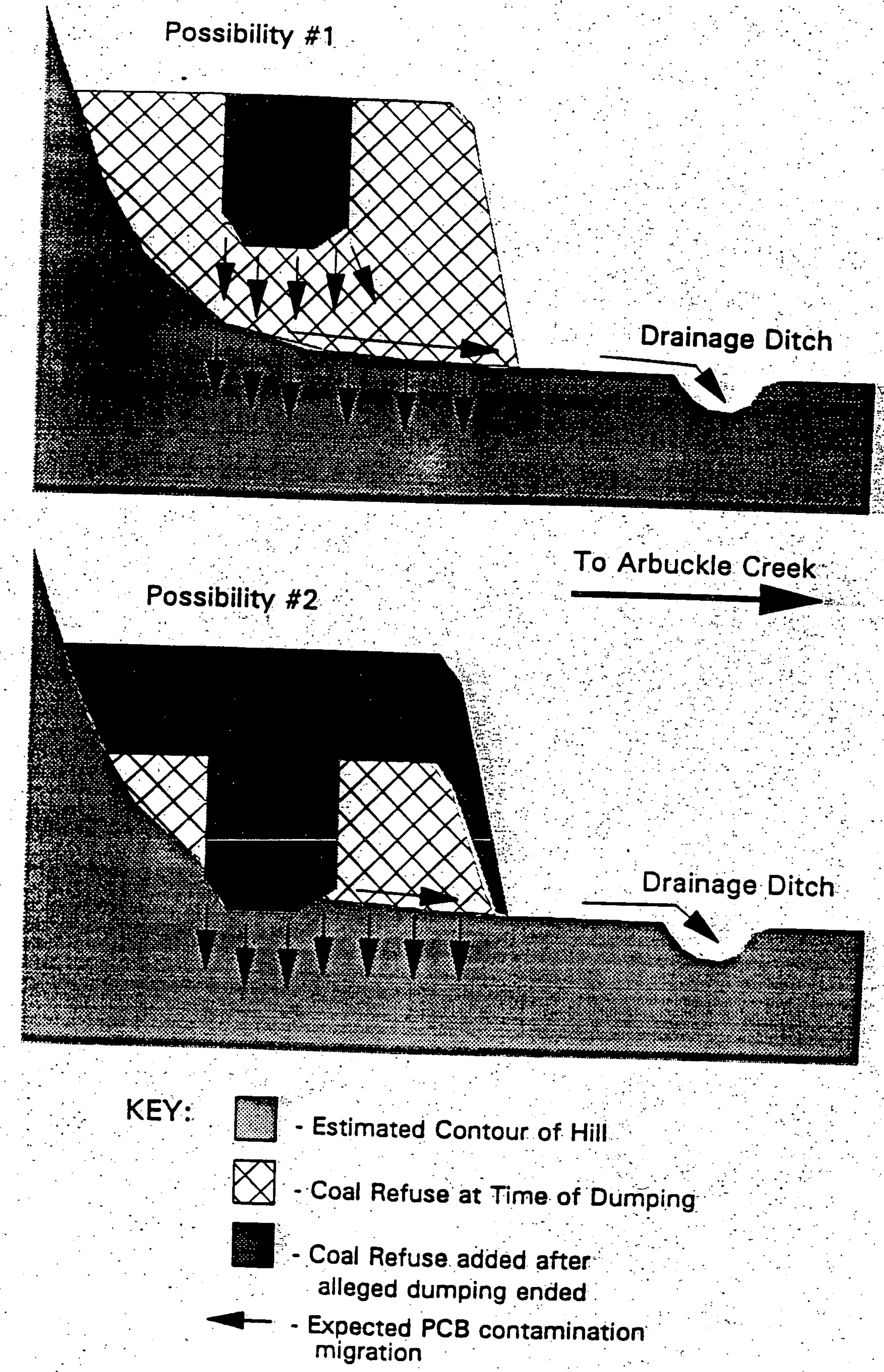
An initial geophysical survey could be utilized to delineate the boundaries of the pit area. Sample points would be selected with the boundaries in such a pattern as to maximize the scenario of finding a "hot spot". The geophysical survey would also be useful in determining if transformer shells were used as fill in the pit. Using this data, boring locations could be chosen to avoid any geophysical anomalies.

Advantages
- Small amount of wastes generated.
- Depth of boring can be increased easily.
- Useful in developing a geological cross section of the area.

Disadvantages
- Snapshot scenario of missing area of contamination.

PFE ORIGINAL

PIT AREA



PFE ORIGINAL

DRAFT

ATTACHMENT 6

SAMPLING EQUIPMENT

1. sampling plan
2. sample location map
3. site log book
4. field data sheets
5. 8-ounce precleaned wide mouth sampling jars
6. 1-liter precleaned amber bottles
7. precleaned sampling scoops
8. split spoon
9. hand hammer
10. hand auger
11. bailor
12. pvc pipe
13. nylon ropes
14. stainless steel or aluminum homogenization containers
15. sample tags
16. sample labels
17. custody seals
18. chain-of-custody forms
19. plastic zip-lock bags
20. shipping containers/coolers
21. vermiculite
22. strapping tape
23. ice
24. distilled water
25. Alconox
26. decontamination brush and bucket
27. trash bags
28. steel drums
29. survey transit
30. measuring tapes
31. wooden stakes
32. survey flags
33. survey rod
34. markers
35. spray paint cans
36. tool box
37. drill rig
38. Ensys PCB test kits
39. table
40. microwave oven
41. electrical generator
42. electrical cables
43. Saranex
44. latex gloves
45. rubber outer gloves
46. rubber booties
47. hard hat

DRAFT

48. safety glasses
49. ear plugs
50. face shield
51. masking tape
52. polyethylene sheet
53. camera with film
54. water level indicator
55. hollow-stem auger
56. bucket auger
57. brush hog
58. chiesel
59. submersible pump
60. gauze pad
61. hexane
62. stainless steel forecep
63. sampling template
64. wire brush
65. dry ice
66. electrical shocking device
67. hand held vacuum cleaner
68. vacuum cleaner bags

DRAFT

ATTACHMENT 7

SAMPLE NUMBERING PROCEDURES

The samples will be numbered as follows:

1. Surface Soil   S xx
2. Subsurface Soil at the Locations of Monitoring Wells
   MW xx-yy
3. Subsurface Soil other than Locations of Monitoring Wells
   SS xx-yy
4. Sediment   SED xx
5. Wipes   WP xx
6. Floor Dust   FD xx
7. Concrete   C xx
8. Groundwater at Monitoring Wells   MW xx
9. Rinsate   R xx
10. Field Blank   FB zz
11. Fish/Turtle   FT zz

xx = location number
yy = average depth in feet
zz = an assigned serial number